

Amendments to the Specification:

Beginning at page 5, line 13 please amend the Summary of the Invention as follows:

SUMMARY OF THE INVENTION

The above and other objects are achieved by the present invention, wherein the Service Operator (SO) of a digital television network provides certain commercial information to the end users along with regular programming and the end user has a receiver for reviewing the embedded commercial information along with the regular programming.

In a Banner Information preferred embodiment of the present invention, the Banner Information transmission is provided in an interactive digital television broadcast system wherein the digital television Service Operator (SO) transmits a signal over their digital television network. The Banner Information transmitted signal contains bitstreams of both regular TV programs and Banner Information. The Banner Information is intended for commercial advertisement. In this Banner Information preferred embodiment, the end user has a specialized digital TV Banner Information Receiver which allows the Banner Information transmitted by the Service Operator to partially occupy the end user's video presentation device.

In this Banner Information preferred embodiment of the present invention, the digital TV

Banner Information Receiver includes a channel demodulator, a Transport Stream (TS) demultiplexer, and audio and video decoders. The preferred embodiment also includes a Banner depacketizer which depacketizes the Banner TS Packets carrying the coded Banner Information, a renderer which decodes and renders the coded Banner Information into a bitmap video signal, and a video output reconstruction unit which generates the output video signal with the rendered Banner Information and the decoded video output. The user's digital TV Banner Information Receiver receives the signal available in the channel, decodes, and delivers the regular TV programs to the user's presentation device and simultaneously decodes, renders, and presents the Banner Information to the user's video presentation device.

In one of the Banner Information embodiments of the present invention, which is more applicable to subscription TV services, but may be applied to non-subscription services as well, the end user obtains the digital TV Banner Information Receiver from the Service Operator based upon an agreement between the Service Operator and the end user whereby the end user agrees to allow the Banner Information transmitted by the Service Operator to partially occupy the user's video presentation device connected to the Digital TV Banner Information Receiver. In this embodiment the Service Operator may agree to eliminate or minimize the subscription or per program charges, or the Service Operator may simply provide the Digital TV Banner Information Receiver and related equipment free of charge.

One Banner Information preferred embodiment of the present invention includes a means for

providing a TS packetized combined digital signal, the combined digital signal having information reflective of a regular program signal and a Banner Information signal;
 The means for providing a combined digital signal includes
 a first coding unit for coding the regular program signal and a second coding unit for coding the Banner Information signal, a first TS packetization unit for receiving the coded regular program signal and providing a packetized bit stream reflecting the coded regular program signal and a second TS packetization unit for receiving the coded Banner Information signal and providing a packetized bit stream reflecting the coded Banner Information signal;
 The means also includes a TS Packet multiplexer for receiving the packetized regular program signal and the packetized Banner Information signal and providing a multiplexed transport stream, and a channel modulation unit for modulating the transport stream into the combined digital signal and sending the combined digital signal for transmission to the channel.

In this Banner Information preferred embodiment, a receiver is provided for receiving the combined digital signal, the receiver includes a channel demodulation unit for demodulating the received combined digital signal and extracting bit streams of the regular program signal and the Banner Information signal from a user-tuned channel, a TS demultiplexing unit for demultiplexing the regular program bitstream and Banner Information TS packets from the signal received from the channel demodulation unit;
 The receiver further includes a Banner Information TS depacketizer for receiving the Banner Information TS packets from the TS demultiplexing unit and depacketizing the Banner Information TS packets to provide a coded Banner Information signal, a Rendering Unit for decoding and rendering the coded Banner Information into a bitmap video signal, a video

reconstruction unit for receiving the rendered Banner Information bitmap video signal and creating an output for a video presentation device;5 Audio/Video decoders are also provided for receiving the regular program bitstream from the TS demultiplexing unit, ~~the Audio/Video decoders decoding~~ audio and video coded bit streams of the regular program signal, ~~the Audio/Video decoders and~~ sending an Audio output signal for transducing into sound and a decoded video signal to the video reconstruction unit;6 ~~the video reconstruction unit reconstructing an output video signal from the decoded video output and the rendered Banner Information bitmap video signal, the video reconstruction unit sending the video output signal to the video presentation device for display where the regular program and the Banner Information are displayed simultaneously; and~~

~~A channel communicates the combined digital signal from the means for providing a combined digital signal to the receiver.~~

A method of providing digital television programming to viewers in this Banner Information preferred embodiment includes the following steps:is also provided. The method includes creating a combined digital television signal which combines information reflective of regular programming and information reflective of Banner Information. The combined digital television signal is then transmitted over a channel. ;

~~transmitting the combined digital television signal over a channel;~~

The method further includes receiving the transmitted, combined digital television signal at a receiver, and; providing the received, combined digital television signal to a presentation unit such that the information reflective of the regular programming and the information reflective of the Banner Information are displayed simultaneously on the presentation unit.

~~This preferred method of providing digital television programming to viewers further includes the steps of:~~

~~providing a receiver to end user's which receiver specifically enables the simultaneous display of the Banner Information and the regular programming on the presentation unit, and~~

~~entering into an agreement with end users which allows for the simultaneous display of the Banner Information and the regular programming on the presentation unit, wherein the agreement provides for a limitation on the subscription charged to the end user.~~

~~A method of operating a receiver for providing digital television programming to viewers in this Banner Information preferred embodiment includes the following steps:~~

~~demodulating the received combined digital signal and extracting bit streams of a regular program signal and a Banner Information signal from a user-tuned channel;~~

~~demultiplexing the regular program bitstream and Banner Information TS packets from the demodulated signal;~~

~~depacketizing the Banner Information TS packets to provide a coded Banner Information signal;~~

~~decoding the coded Banner Information; and~~

~~rendering the coded Banner Information into a bitmap video signal;~~

~~decoding audio and video coded bit streams of the regular program signal;~~

~~sending an audio output signal for transducing into sound;~~

~~reconstructing an output video signal from the decoded video output and the bitmap video signal reflective of the Banner Information signal; and~~

~~sending the output video signal to the video presentation device for display where the regular program and the Banner Information are displayed simultaneously.~~

The present invention also allows for several Background Commercial preferred

embodiments. In these Background Commercial preferred embodiments of the present invention, an interactive digital television broadcast system transmits Background Commercials in addition to regular scheduled programming to an end user, the end user selects whether, when and how it wishes to view the Background Commercials, and return information is communicated to the network service operator.

In the herein described Background Commercial preferred embodiments of the present invention, new Background Commercial digital television broadcast systems are described, which for purposes of this disclosure shall be named as the “View-to-Save service” and “View-for-Money service.” These Background Commercial preferred embodiments are described in reference to the known digital video service networks described above including the digital cable TV, digital satellite TV, video-on-demand, and terrestrial Digital TV broadcasting systems. However, neither the present invention nor the preferred embodiments should be limited to those specific networks.

In the Background Commercial preferred embodiments of the present invention, Background Commercials are encoded, packetized, and multiplexed with packetized bitstreams of regular programs within a transmitted MPEG-2 signal, and then transmitted to the end-users through one of the digital video service networks. Background Commercials are commercial advertisement programs which requires a user’s permission, or, request so that they may access a user’s presentation unit. The end users receive the combined broadcast MPEG-2 signal, which includes both the normally broadcast digital video signal and the Background Commercials, through a

receiver which is specifically designed to be used with the Background Commercial preferred embodiments of the present invention.

The receiver of these preferred embodiments of the present invention includes a switch whereby the end user can enable or disable receipt and display of the service function of the preferred embodiments of the present invention. Through this switch, the end user can thereby enable or disable the rendering and/or presentation process of Banner Information of the received Background Commercials so that the rendered Background Commercial Banner Information of the Background Commercials can or can't be presented at the end user's presentation device. Background Commercial Banner Information is information which is related to the Background Commercials broadcast, and which takes the form of text, graphics, and images associated with the content of the Background Commercials.

The Background Commercial preferred embodiments of the present invention allow the user to request to view the audio/video contents of the Background Commercials from the Receiver when the received Background Commercials has audio/video bit streams. Alternatively, the end user can request to save the audio/video bit streams of the Background Commercials and can view them later when viewing is more desirable or convenient. If the end user selects to save the audio/video bit streams for later viewing, -the receiver then records the user's Background Commercials-viewing data in an associated storage unit.

In these preferred embodiments of the present invention, a return channel allows the user's viewing choices and other such information to be communicated back to the associated service operator. -In exchange for, and based upon this returned information, i.e., the user's Background Commercials-viewing record and programming selections, the service operator can then provide benefits to the end user in the form of savings on monthly service charges if applicable, giving away pay-per-view broadcasts similar to the end user's previous viewing selections, giving commercial coupons for future savings, providing revenue sharing arrangements, etc.

One Background Commercial preferred embodiment of the interactive digital video service network of the present invention described herein ~~comprises~~includes a means for providing a digital signal, the digital signal having information reflective of at least one regular program and at least one Background Commercial; an end user, the end user having a receiver for receiving the digital signal and a presentation unit for displaying at least a portion of the digital signal; a channel communicating the digital signal from the means for providing a digital signal to the receiver; selection means for allowing the end user to select between the at least one regular program and the at least one Background Commercial for display on the presentation unit;~~;~~ and a A return channel for communicating Background Commercial Viewing Data from the receiver to a digital service operator is also provided. In this Background Commercial preferred embodiment, the information reflective of the at least one Background Commercial contains Audio-Visual Information and/or Background Commercial Banner Information,~~the Background Commercial Banner Information being presented to the presentation unit with the at least one regular program.~~ This Background

Commercial preferred embodiment further comprises a control switch whereby the user can filter the Background Commercial portion of the digital signal from being delivered to the presentation unit, and it may further comprise a means for communicating the Background Commercial Viewing Data over the return channel from the receiver to the service operator, and means for updating a Background Commercial Viewing Record with the Background Commercial Viewing Data communicated from the receiver to the digital service operator.

~~A further Background Commercial preferred embodiment of the interactive digital video service network of the present invention described herein comprises: means for providing a digital signal, the digital signal having information reflective of at least one regular program and at least one Background Commercial, wherein the information reflective of the at least one Background Commercial contains Background Commercial Banner Information; an end user, the end user having a receiver for receiving the digital signal and a presentation unit for displaying at least a portion of the digital signal, the Background Commercial Banner Information being presented to the presentation unit with the at least one regular program; and a channel communicating the digital signal from the means for providing a digital signal to the receiver. This Background Commercial preferred embodiment further comprises selection means for allowing the end user to select between the at least one regular program and the at least one Background Commercial for display on the presentation unit, and may further comprise a return channel for communicating Background Commercial Viewing Data from the receiver to a digital service operator. In this Background Commercial preferred embodiment, the information reflective of the at least one Background~~

~~Commercial contains Audio Visual Information and/or Background Commercial Banner Information, the Background Commercial Banner Information being presented to the presentation unit with the at least one regular program. In this further embodiment a control switch allows the user to filter the Background Commercial portion of the digital signal from being delivered to the presentation unit. This further embodiment further comprises a means for communicating the Background Commercial Viewing Data over the return channel from the receiver to the service operator, and means for updating a Background Commercial Viewing Record with the Background Commercial Viewing Data communicated from the receiver to the digital service operator.~~

~~A method which drives the Background Commercial service network embodiment of the present invention, comprises the steps of: creating a combined digital television signal which combines information reflective of regular programming and Background Commercials, the information reflective of the Background Commercials containing Audio Visual Information and/or Background Commercial Banner Information; transmitting the combined digital television signal over a channel to end users; receiving the combined digital television signal at a receiver; selecting a selected portion of the combined digital signal from the information reflective of the regular programming and the Background Commercials for display at a presentation unit; and displaying the selected portion of the combined digital signal on the presentation unit. This method may further comprise the steps of creating Background Commercial Viewing Data, communicating the Background Commercial Viewing Data from the receiver to the service operator, and updating a Background Commercial Viewing Record with the Background Commercial Viewing Data~~

~~communicated from the receiver to the service operator. This method may also comprise the step of presenting Background Commercial Banner Information with the selected portion of the combined digital signal for display on the presentation unit.~~

~~A Background Commercial preferred embodiment of a receiver for an interactive digital video service network within the present invention comprises: means for receiving a digital signal, the digital signal having information reflective of a regular program and at least one Background Commercial, wherein the information reflective of the at least one Background Commercial contains Background Commercial Banner Information; means for decoding the digital signal and providing a first signal reflective of the regular program and a second signal reflective of the at least one Background Commercial; means for receiving the signal reflective of the at least one Background Commercial and providing a signal reflective of the Background Commercial Banner Information; and means for providing a video output signal, the means for providing the video output signal combining information from the signal reflective of the regular program and the signal reflective of the Background Commercial Banner Information. This receiver embodiment may further comprise a User Interface means for obtaining User commands to enable or disable the inclusion of Background Commercial Banner Information in the video output signal and a control unit for providing control signals reflective of the User commands. This receiver embodiment may further comprise a storage means for storing Background Commercial view data and a transmission means for providing a return signal reflective of the Background Commercial view data.~~

~~A further Background Commercial preferred embodiment of a receiver for an interactive digital video service network within the present invention comprises: means for receiving a digital signal, the digital signal having information reflective of a regular program and at least one Background Commercial, wherein the information reflective of the at least one Background Commercial contains Audio Visual Information and Background Commercial Banner Information; means for decoding the digital signal and providing a first signal reflective of the regular program and a second signal reflective of the at least one Background Commercial; means for receiving the second signal reflective of the at least one Background Commercial and providing a first BC signal reflective of the Background Commercial Banner Information related to one of the at least one Background Commercials and a second BC signal reflective of Audio Visual Information related to the one of the at least one Background Commercials; and means for providing a video output signal, the means for providing the video output signal combining information from one of (i) the signal reflective of the regular program or (ii) the second BC signal, with information from the signal reflective of the Background Commercial Banner Information. In this further receiver embodiment the means for receiving the signal reflective of the at least one Background Commercial provides a third BC signal reflective of information identifying the one of the at least one Background Commercials. This further receiver embodiment further comprises a selection means for allowing an end user to select between information from the signal reflective of the regular program and information from the second BC signal for inclusion in the video output signal. This further receiver embodiment also further comprises a User Interface means for obtaining User commands to enable or disable the inclusion of Background Commercial Banner Information and/or the second BC signal~~

~~in the video output signal and a control unit for providing control signals reflective of the User commands. A storage means is included for storing Background Commercial view data and a transmission means for providing a return signal reflective of the Background Commercial view data. The same or a further storage means may be provided for storing information from the second BC signal, and means for replaying the second BC signal stored in the storage means to the means for providing a video output signal for inclusion in the video output signal. The same or a further storage means may also be provided for storing information from the signal reflective of the regular program, and means for replaying the signal reflective of the regular program stored in the storage means to the means for providing a video output signal for inclusion in the video output signal.~~

Beginning at page 29, line 5 please amend the paragraph as follows:

The storage device(s) 406, may be a hard drive or any other type of digital storage device, saves audio/video bit streams of a Background Commercials 429 and the user's Background Commercials-viewing record. A selector unit 408 selects between the audio/video bit streams of the regular program 427 and the audio/video bit streams of the Background Commercials 429 stored in the storage device 406 in accordance with the control signal 451 from the control unit 405. The control unit 405 couples to the User interface 410 to obtain from the user 450 the user's command 453 to view the Audio-Visual Information of the Background Commercials received 429.

Beginning at page 29, line 14 please amend the paragraph as follows:

Audio/Video decoders 409 decode the selected audio and video coded bit streams 430

and send a decoded video signal 461 to the video reconstruction unit 407. The video reconstruction unit 407 reconstructs the output video 462 from the decoded video output 461 and the rendered ~~Background Commercial~~ Banner Information (i.e., rendered Background Commercial Banner Information) 428 in accordance with the control signal 452 from the control unit 405.

Beginning at page 31, line 5 please amend the paragraph as follows:

A Background Commercials extraction and rendering unit 504 extracts and renders the ~~Background Commercial~~ Banner Information (i.e., Background Commercial Banner Information) 528 of the received Background Commercials, sends Background Commercials information data 525 to a control unit 505 for managing purposes, and, sends the rendered Background Commercial Banner Information 528 to a video reconstruction unit 507 to present to the user's presentation device.

Beginning at page 34, line 1 please amend the paragraph as follows:

Audio/Video decoders 609 decode the selected audio and video coded bit streams 630 and send a decoded video signal 661 to the video reconstruction unit 607. The video reconstruction unit 607 reconstructs the output video 662 from the decoded video output 661 and the rendered ~~Background Commercial~~ Banner Information (i.e., rendered Background Commercial Banner Information) 628 in accordance with the control signal 652 from the control unit 605.